

1971

OPERATING
SUMMARY



TIMMINS

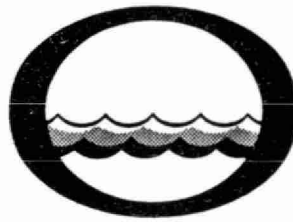
WATER POLLUTION CONTROL PLANT

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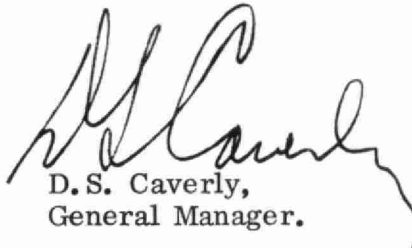


Water management in Ontario


Ontario
Water Resources
Commission

We are pleased to submit for your consideration a summary of operation during 1971 of the water pollution control plant serving your community.

This operating summary contains parameters normally used to measure plant performance and loading, as well as relevant cost data. Because of the concern over eutrophication of our lakes and of the requirement, in many parts of Ontario, to remove the major contributing factor, results of analysis for phosphorus appear in **this** summary.



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General Manager.



D. A. McTavish, P. Eng.,
Director,
Division of Plant Operations.

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TIMMINS
WATER POLLUTION CONTROL PLANT

operated for

THE TOWN OF TIMMINS

by the

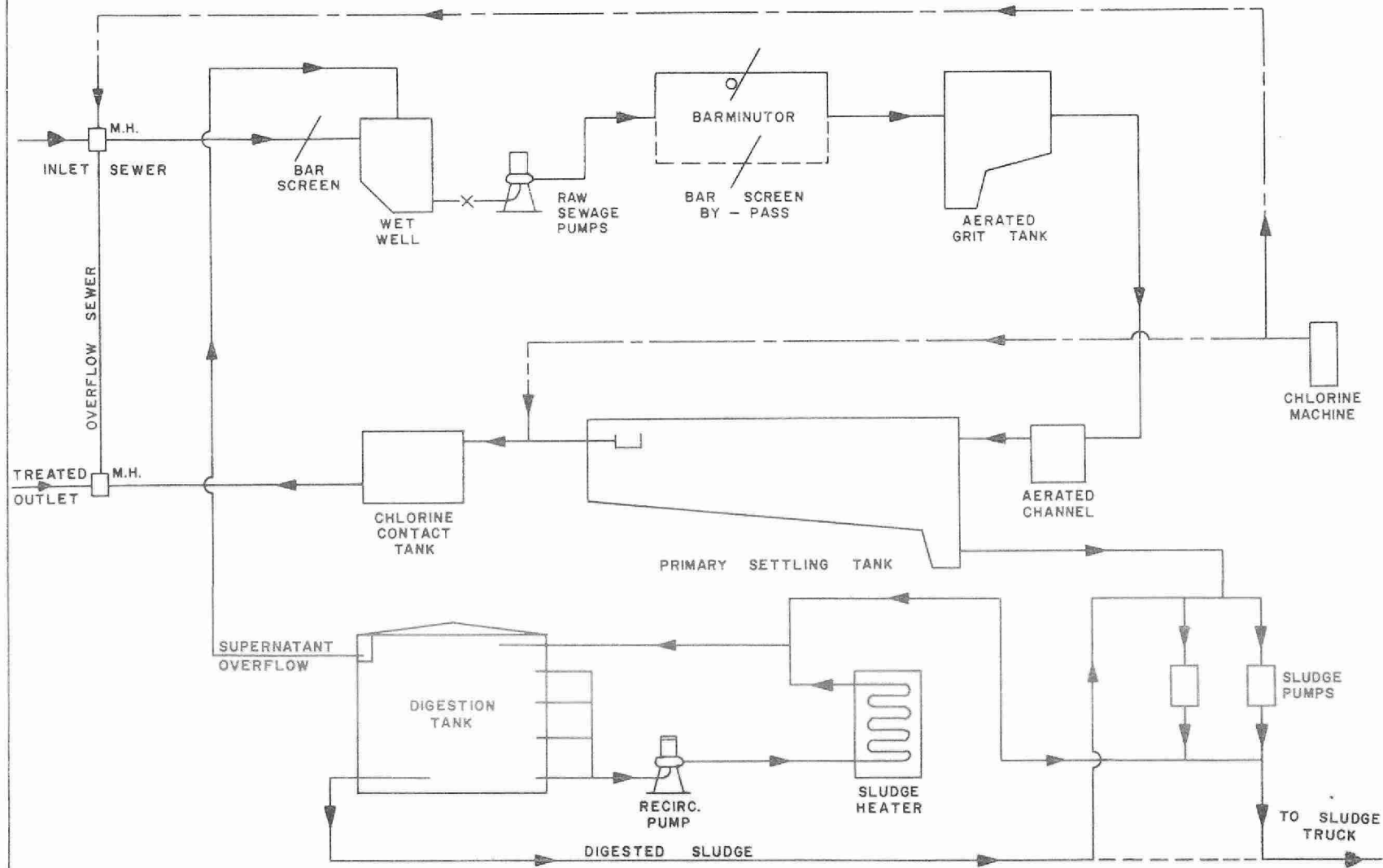
ONTARIO WATER RESOURCES COMMISSION

1971 ANNUAL OPERATING SUMMARY

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TIMMINS WPCP



DESIGN DATA

PROJECT NO. 2-0071-60

TREATMENT Primary

DESIGN FLOW 3.0 mgd

DESIGN POPULATION 30,000

BOD - Raw Sewage 180 mg/l
- Removal 35-40%

SS - Raw Sewage 200 mg/l
- Removal 60-65%

RAW SEWAGE PUMPS

Screening

Type: Manually Cleaned
Size: 2" opening

Pumps

Type: Worthington
Size: One 3650 gpm @ 26' tdh
One 3120 gpm @ 26' tdh
One 3120 gpm @ 26' tdh (diesel)

PRIMARY TREATMENT

Comminution

Type: Chicago Pump Barminutor
Size: One Model C (36")

Grit Removal

Type: Aerated
Size: One 13' x 18 3/4' x 12 1/2'
(19,000 gal)
Retention: 9.1 min
Air Supply: Two Sutorbilt

Primary Sedimentation

Type: Jeffrey
Size: Two 125' x 20' x 12' (avg)
(374,000 gal)
Retention: 3.0 hr
Loading: Surface, 600 gal/ft²/day
Weir, 9900 gal/ft/day

CHLORINATION

Type: F & P
Size: One 200 lb/day

Chlorine Contact Chamber

Size: Two 47 1/2' x 7' x 9'7"
(37,400 gal)
Retention: 19 min

OUTFALL

To Mattagami River

SLUDGE HANDLING

Digestion System - single-stage,
concrete
Type: PFT (gas mixed)
Size: One 65' dia x 24' swd (80,000
cu ft or 0.50 mil gal)
Loading: 1.35 lb/cu ft/mo

'71 Review

GENERAL

The Timmins plant is a four million gallon per day primary treatment facility. The treated effluent is discharged to the Mattagami River downstream from Timmins.

During 1971 a new chief operator was hired. To replace an operator absent with a prolonged sickness another operator was also hired. The plant is staffed by the chief operator and two operators.

Major overhauls of both sludge pumps, all unit heaters and number 2 clarifier were carried out. The digester, digester gas piping, control room floor, office, washroom, entrance hall as well as all doors were painted by the plant staff.

The waste gas burner was relocated. A potable water line from the Town distribution system was installed to the plant after the failure of the plant well.

A major breakdown of the number 1 raw sewage pump occurred and repair was effected by plant staff.

A new storage shed was installed and modifications made to the existing storage area.

EXPENDITURES

The operating cost for the year was \$67,240.79, an increase of 5 percent over 1970. The greater part of this increase was due to repairs and maintenance.

PLANT FLOWS and CHLORINATION

The average daily flow increased by 0.36 million gallons over 1970. The average daily flow of 3.6 mgd was 90 percent of the nominal design capacity of 4 mgd. Metering problems were partially encountered for three months, therefore the flow figures are partially estimated.

The design daily flows was exceeded 28 percent of the time. However the wet weather design capacity of 9 mgd was not exceeded during the year. On request by the Division of Sanitary Engineering year-round chlorination was begun in 1971. The final effluent was disinfected with 44,900 pounds of chlorine between May and December to maintain a residual of 0.5 mg/l.

PLANT EFFICIENCY

The average raw sewage BOD and suspended solids concentrations were 161 mg/l and 183 mg/l. These loadings are considerably lower than those of previous years. Average BOD and suspended solids reductions were 59 percent and 67 percent respectively and represent good treatment for a primary facility.

A total of 612 tons of BOD and 972 tons of suspended solids was removed during the year. The final effluent concentrations were 66 mg/l BOD and 60 mg/l suspended solids.

A total of 15,125 cubic feet of grit was removed from the raw sewage. This represents an average of 11.5 cubic feet of grit per million gallons of sewage treated which is much above normal and is usually indicative of combined sewers.

SLUDGE DIGESTION and DISPOSAL

A total of 10,560,000 gallons of raw sludge was pumped to the digester. The raw sludge averaged 2.6 percent total solids, 70 percent of which was volatile matter. The digested sludge averaged 2.9 percent total solids of which 62 percent was volatile. A total of 3 million gallons of digested sludge was hauled from the digester by tank truck.

CONCLUSIONS

The project is operating efficiently at average flows of 3.6 mgd. The design capacity of 4.0 mgd is being approached and serious consideration of expansion of the project should be made.

PROJECT COSTS

NET CAPITAL COST (Final)	\$785, 370.12
DEDUCT - Portion financed by CMHC/MDLB (Final)	<u>521, 108.36</u>
Long Term Debt to OWRC	<u>\$264, 261.76</u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1971	\$ <u>79, 963.90</u>
Net Operating	\$ 67, 240.79
Debt Retirement	6, 566.00
Reserve	3, 781.28
Interest Charged	<u>14, 822.66</u>
TOTAL	\$ <u>92, 410.73</u>

RESERVE ACCOUNT

Balance @ January 1, 1971	\$ 28, 460.22
Deposited by Municipality	3, 781.28
Interest Earned	<u>1, 783.83</u>
	\$ 34, 025.33
Less Expenditures	<u>9, 000.00</u>
Balance @ December 31, 1971	\$ <u>25, 025.33</u>

1971 COSTS

OPERATING COSTS

• PAYROLL	45 %
• FUEL	6 %
• POWER	7 %
• CHEMICALS	5 %
• GENERAL SUPPLIES	5 %
• EQUIPMENT	< 1 %
• REPAIRS & MAINTENANCE	10 %
• SUNDRY	21 %
• WATER	NIL %
• TRAVEL	< 1 %

TOTAL ANNUAL COST

NET OPERATING	73 %
DEBT RETIREMENT	7 %
RESERVE	4 %
INTEREST	16 %

YEARLY OPERATING COSTS

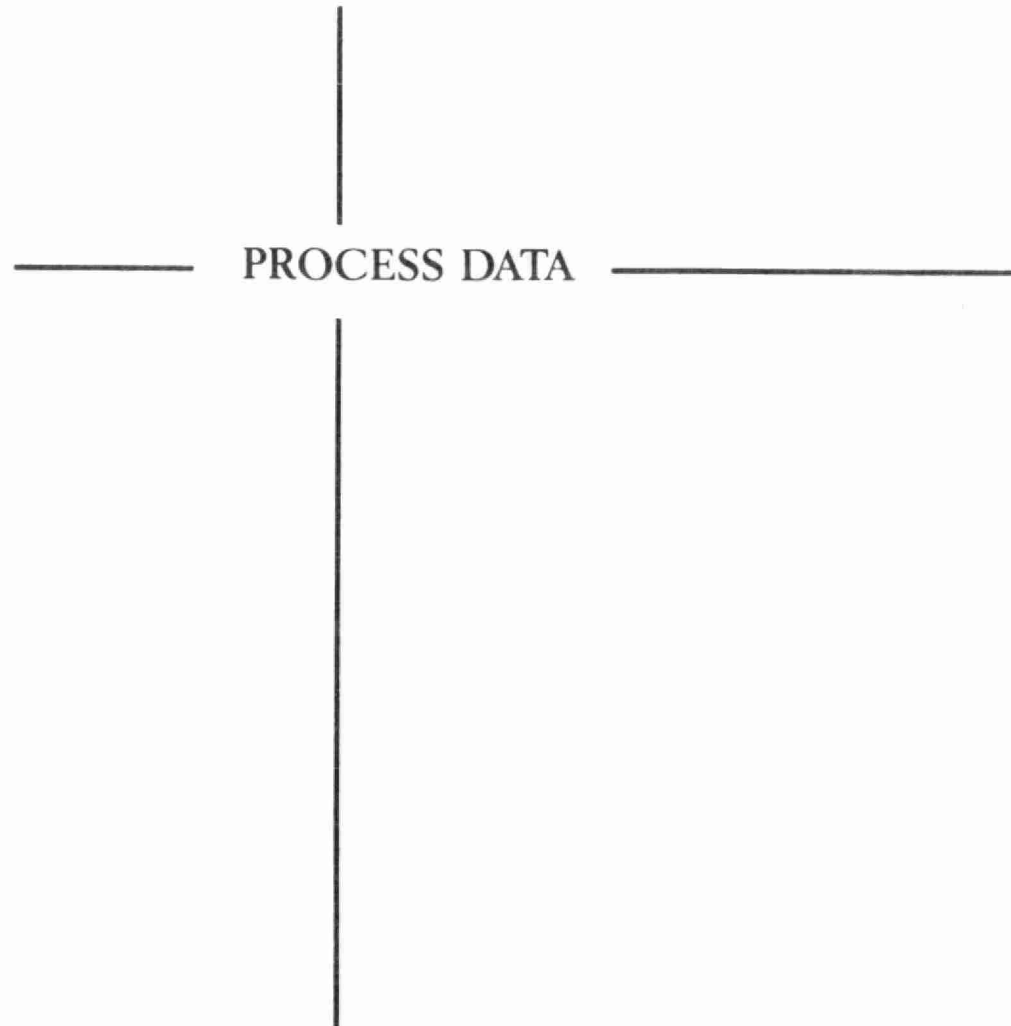
YEAR	SEWAGE TREATED in million gallons	TOTAL OPERATING COSTS	TREATMENT COSTS	
			\$ per million gal	¢ per lb BOD
1967	1144.8	\$59,857.94	\$52.28	6 cents
1968	1020.0	54,186.55	53.00	6 cents
1969	1049.9	59,394.86	56.57	3 cents
1970	1182.5	63,815.38	53.97	5 cents
1971	1300. *	67,240.79	52.00	5 cents

MONTHLY OPERATING COSTS

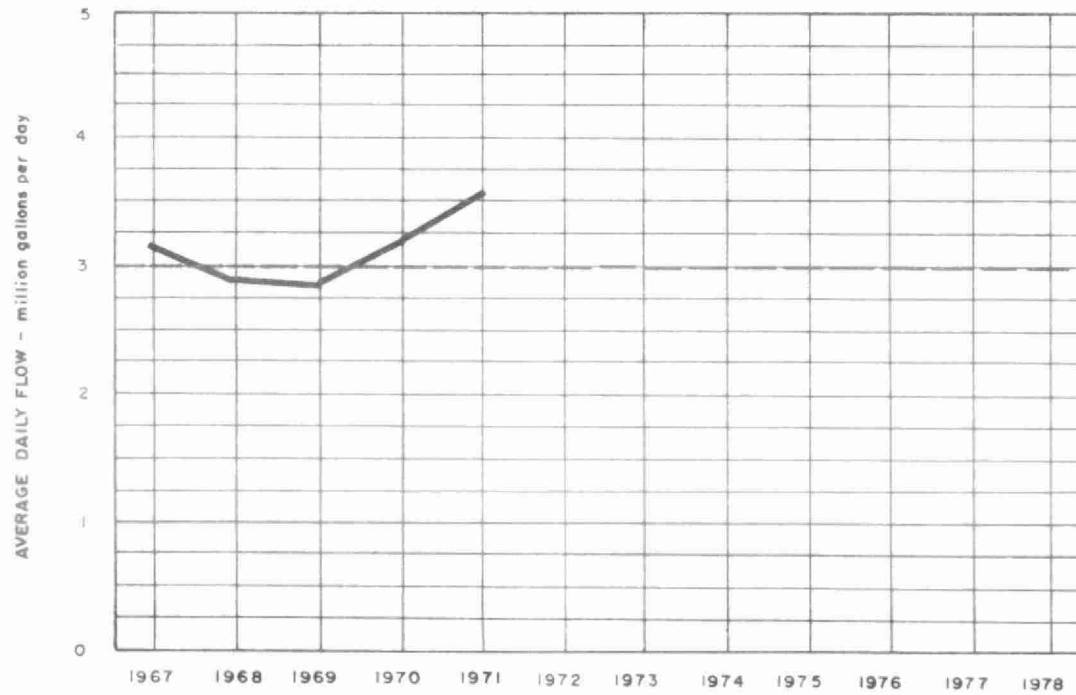
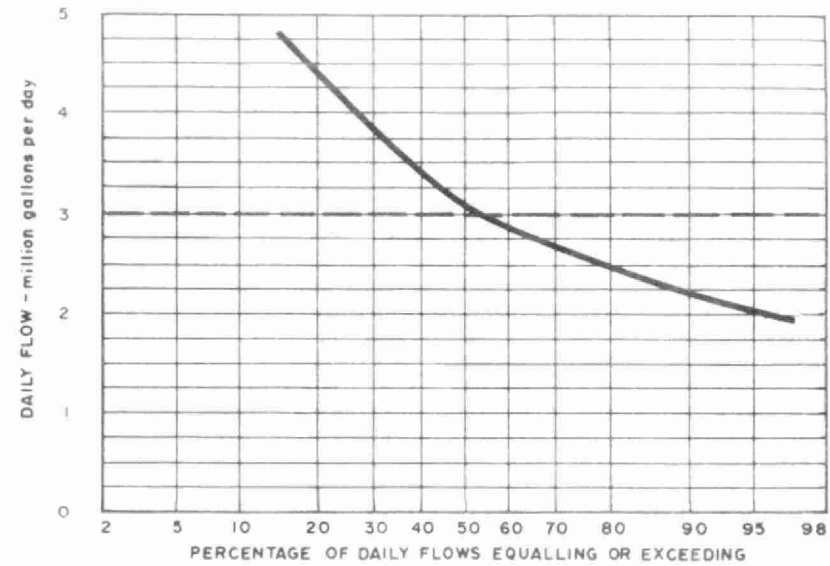
MONTH	TOTAL EXPENDITURE	REGULAR PAYROLL	CASUAL PAYROLL	FUEL	POWER	CHEMICALS	GENERAL SUPPLIES	EQUIPMENT	REPAIRS and MAINTENANCE	SUNDRY*	WATER	TRAVEL
JAN	2228.48	1854.52	304.56	-	-	-	69.40	-	-	-	-	-
FEB	5930.41	2753.68	21.22	710.46	680.02	-	206.71	-	404.99	1153.33	-	-
MAR	3988.88	1867.94	-	488.51	330.70	-	261.11	-	-	1040.62	-	-
APR	4239.12	1747.74	-	-	457.18	-	221.63	-	73.35	1739.22	-	-
MAY	5877.29	2568.78	791.39	279.79	456.38	-	341.81	-	101.30	1237.84	-	-
JUNE	6269.15	1261.98	750.40	474.51	417.58	1778.00	178.01	130.00	207.75	1070.92	-	-
JULY	3951.89	902.54	1001.95	-	411.58	-	335.04	-	97.33	1203.45	-	-
AUG	4299.28	2117.67	1006.80	-	380.38	-	157.01	17.19	300.71	-	-	319.52
SEPT	6429.55	1345.43	292.94	188.00	390.78	813.00	172.85	-	516.39	2686.00	-	24.16
OCT	4490.73	2086.11	987.84	188.00	416.38	-	67.80	112.97	548.73	82.90	-	-
NOV	6063.06	1661.79	1000.94	486.26	380.38	(177.95)	425.06	92.38	1157.21	1007.23	-	29.76
DEC	13472.95	2471.67	1669.21	971.00	353.38	813.00	758.47	135.49	3191.14	2865.26	-	245.33
TOTAL	67240.79	22639.85	7826.25	3886.53	4674.74	3226.05	3194.90	488.03	6598.90	14086.77	-	618.77

Brackets indicate credit.

* Sundry includes sludge haulage costs of \$12,517.05



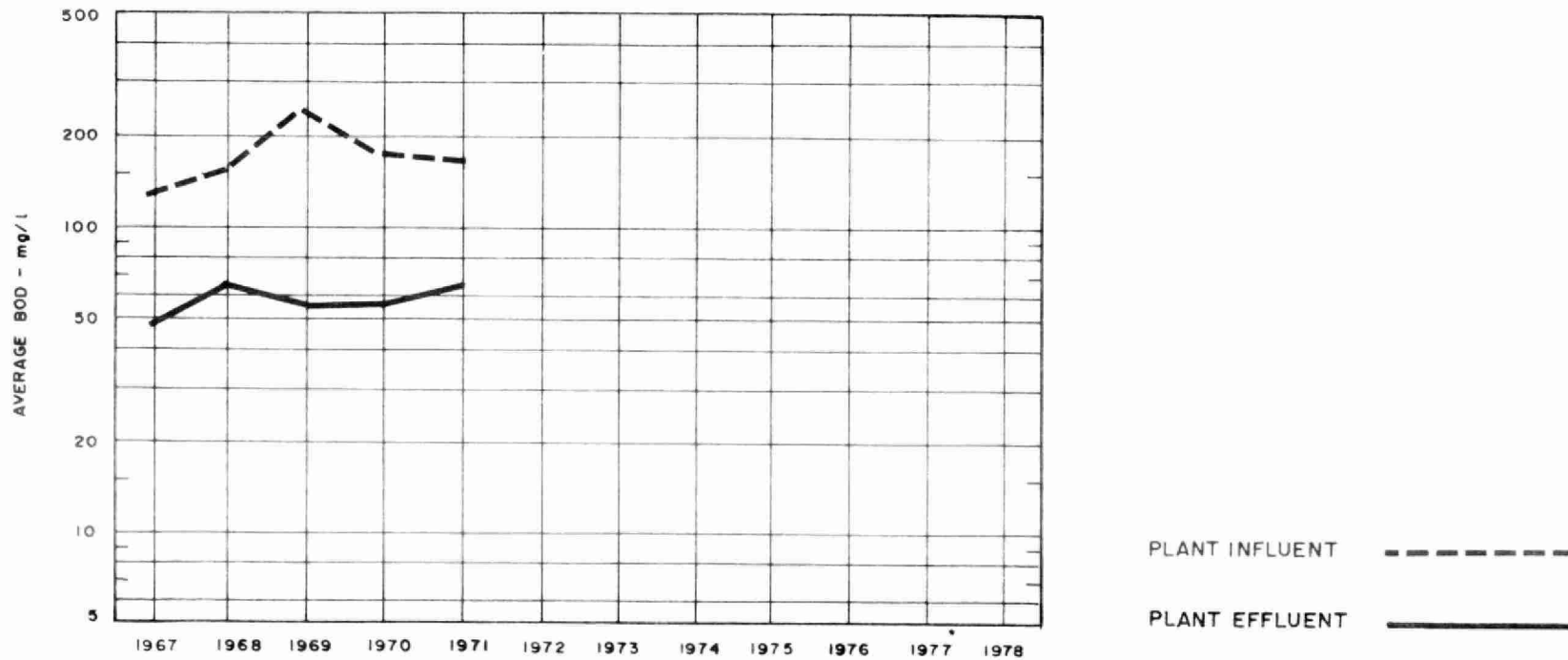
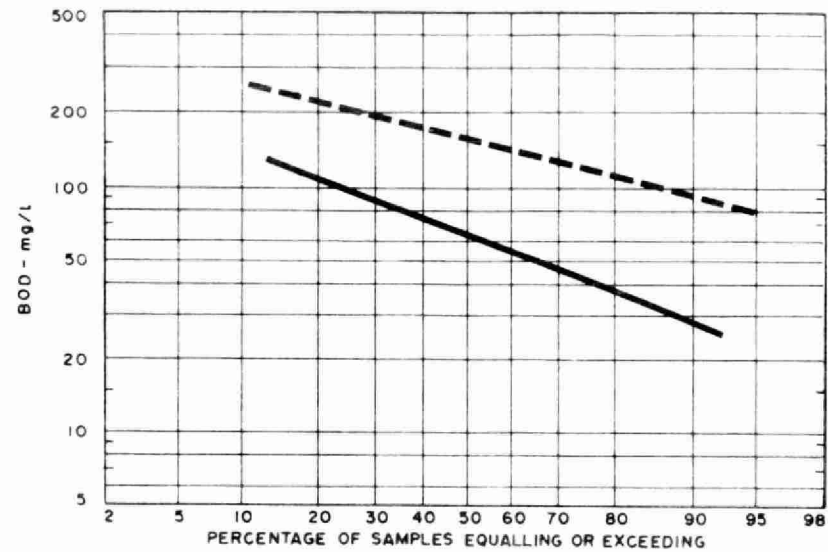
FLOWS



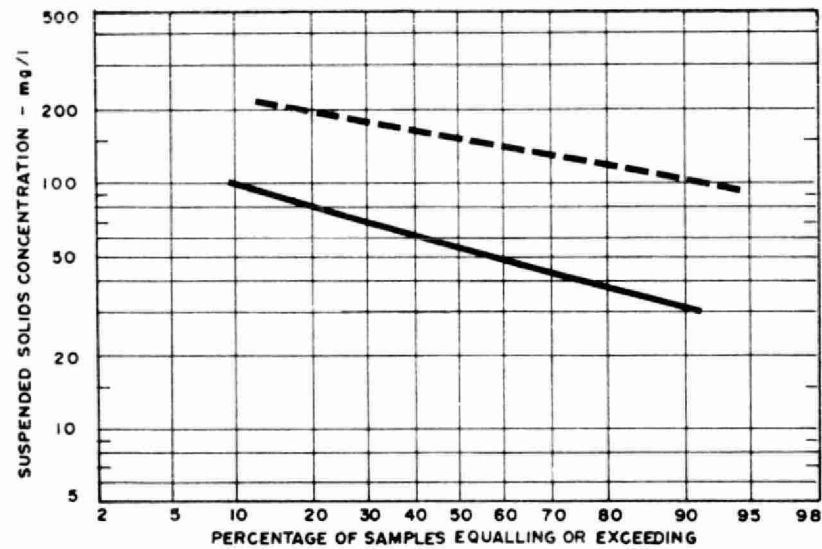
PLANT PERFORMANCE

MONTH	FLOWS				BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				TOTAL PHOSPHORUS		
	TOTAL FLOW	AVERAGE DAY	MAXIMUM DAY	MAXIMUM RATE	INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT	REDUCTION
	million gallons	mil gal	mil gal	mgd	mg/l	mg/l	%	10 ³ pounds	mg/l	mg/l	%	10 ³ pounds	mg/l as P	mg/l as P	%
JAN	79.	2.5	3.0	8.2	230	33	85	154.	255	33	87	174.	-	-	-
FEB	75.	2.7	4.2	8.8	300	46	85	189.	480	45	91	325.	-	-	-
MAR	94.	3.1	3.7	9.1	240	100	58	132.	370	90	76	263.	-	-	-
APR	165.	5.5	7.1	9.5	140	70	50	116.	190	70	63	198.	-	-	-
MAY	148.	4.8	7.3	9.3	75	55	27	29.	120	50	58	103.	-	-	-
JUNE	117.	3.9	6.1	9.6	-	-	-	-	-	-	-	-	-	-	-
JULY	86.	2.8	4.2	8.8	180	53	71	109.	125	35	72	77.	6.3	3.4	46
AUG	o/s	-	-	-	125	61	51	-	145	87	40	-	7.0	7.9	0
SEPT	o/s	-	-	-	93	38	59	-	85	53	38	-	9.2	-	0
OCT	o/s	-	-	-	150	120	20	-	140	90	36	-	13.0	13.0	0
NOV	82.	2.7	3.2	5.6	140	79	44	49.	157	58	63	81.	7.7	6.2	19
DEC	144.	4.7	7.9	9.9	150	120	20	43.	125	70	74	79.	9.0	6.6	27
TOTAL	1300. (est)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AVG.	-	3.6	MAXIMUM 7.9	MAXIMUM 9.9	161	66	59	102.	183	60	67	162.	8.2	6.8	17
No. of Samples	-	-	-	-	17	17	-	-	17	17	-	-	10	8	-

BIOCHEMICAL OXYGEN DEMAND

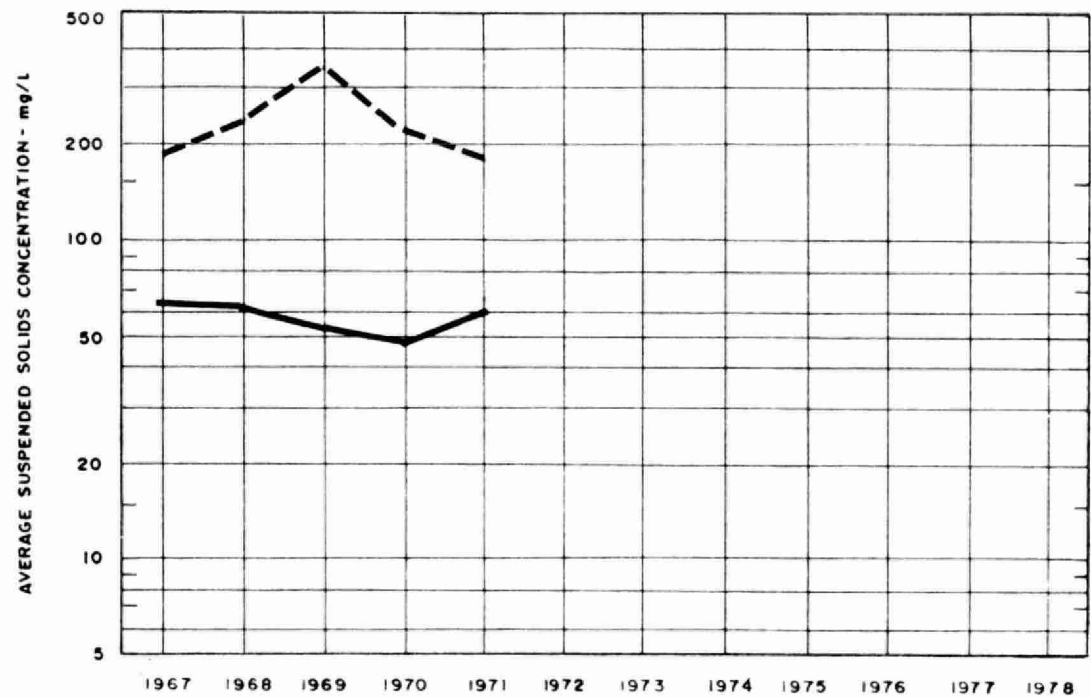


SUSPENDED SOLIDS



PLANT INFLUENT - - - - -

PLANT EFFLUENT _____

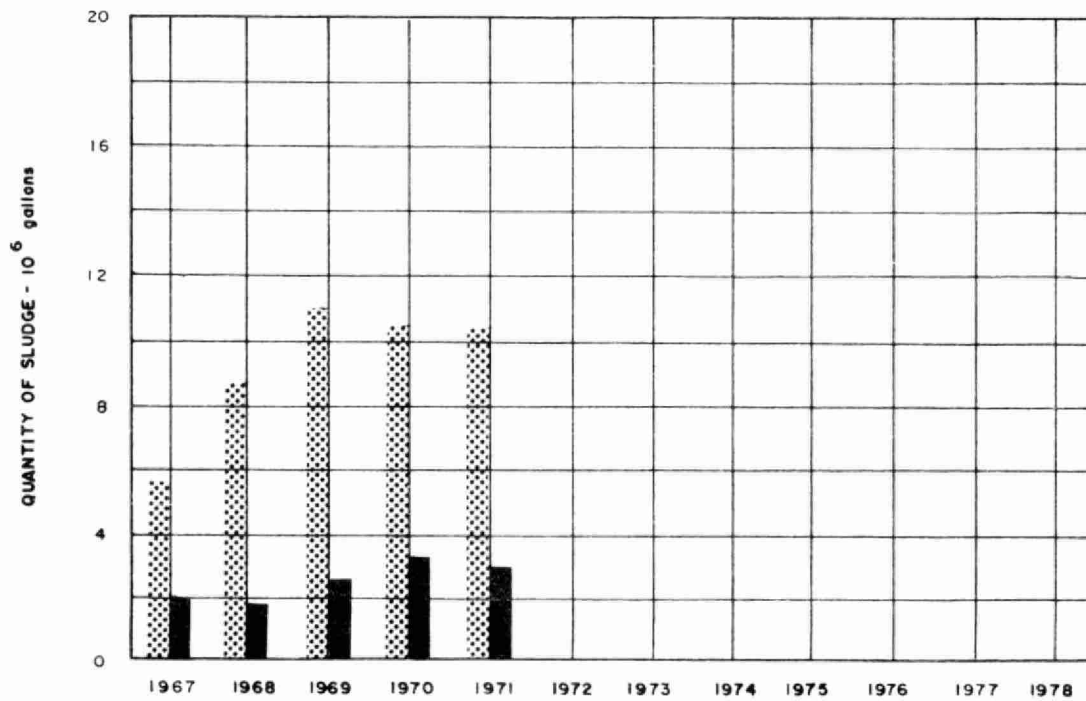
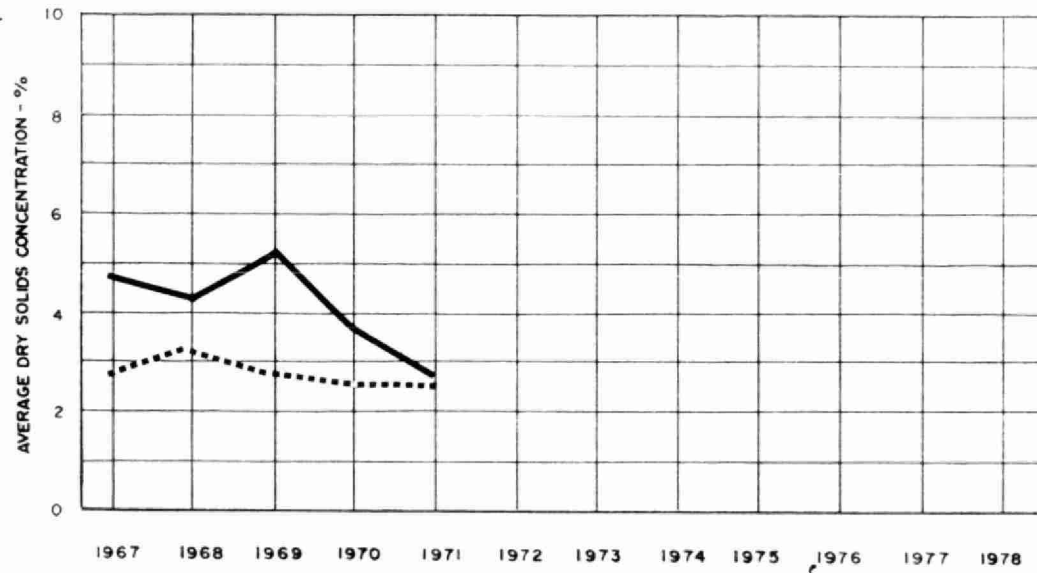


TREATMENT DATA

MONTH	GRIT	CHLORINATION		SLUDGE DIGESTION and DISPOSAL							
	QUANTITY REMOVED cubic feet	CHLORINE USED 10 ³ pounds	AVERAGE DOSAGE mg/l	RAW SLUDGE			DIGESTED SLUDGE			SUPERNATANT	SLUDGE HAULED cubic yards
				QUANTITY 10 ³ gallons	TOTAL SOLIDS %	VOLATILE SOLIDS %	QUANTITY REMOVED 10 ³ gallons	TOTAL SOLIDS %	VOLATILE SOLIDS %	TOTAL SOLIDS %	
JAN	600	-	-	8.9	2.5	-	2.5	1.4	-	.2	1467
FEB	660	-	-	8.1	-	-	2.3	-	-	-	1676
MAR	600	-	-	8.9	-	-	3.9	-	-	-	2345
APR	1080	-	-	8.7	-	-	2.9	-	-	-	1739
MAY	1200	3.61	4.3	8.9	-	-	2.5	-	-	-	1481
JUNE	1390	6.36	5.4	8.7	-	-	2.7	-	-	-	1585
JULY	1440	5.97	6.9	9.3	1.1	-	2.1	4.7	-	-	1257
AUG	1615	6.12	9.8	9.0	1.8	-	1.5	.5	-	-	878
SEPT	1620	5.88	-	8.7	4.6	-	2.4	6.2	56	-	1401
OCT	1500	5.06	-	8.9	2.8	73	2.2	2.4	67	-	1323
NOV	1800	5.62	6.9	8.6	3.7	68	2.4	2.7	61	.13	1439
DEC	1620	6.30	4.4	8.9	2.0	69	2.0	2.4	64	.18	1205
TOTAL	15125	44.92	-	105.6	-	-	29.4	-	-	-	17796
AVG.	11.5 cubic feet/mil gal	5.61	6.2	8.8	2.6	70	2.5	2.9	62	.17	1483

DIGESTION

RAW SLUDGE
DIGESTED SLUDGE ———



RAW SLUDGE TO DIGESTER
DIGESTED SLUDGE REMOVED ———

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